# VOLUME 156 CONTENTS

## NUMBER 1, JANUARY 1995


1–8 CYTOKINESIS IN *SPIROGYRA*: INTEGRATION OF CLEAVAGE AND CELL-PLATE FORMATION
*Kirsten McIntosh, Jeremy D. Pickett-Heaps, and Brian E. S. Gunning*

9–18 ULTRASTRUCTURE OF CONIDIA AND THE CONIDIUM AGING PROCESS IN THE PLANT PATHOGENIC FUNGUS *COLLETOTRICHUM GRAMINICOLA*
*Charles W. Mims, Elizabeth A. Richardson, Ronald P. Clay, and Ralph L. Nicholson*

19–28 PHOTOSYNTHETIC RATES AND NUTRIENT-USE EFFICIENCY AMONG EVERGREEN AND DECIDUOUS SHRUBS IN OKEFENOKEE SWAMP
*Evan H. DeLucia and William H. Schlesinger*

29–36 ANATOMICAL ASPECTS OF POLLEN RELEASE FROM STAMINATE FLOWERS OF *AMBROSIA TRIFIDA* (ASTERACEAE)
*John D. Curtis and Nels R. Lersten*

37–41 STIGMATIC RNase IN SELF-COMPATIBLE PEACH (*PRUNUS PERSICA*)
*Levava Roiz and Oded Shoseyov*

42–49 REPRODUCTIVE BIOLOGY OF *VISCUM CRUCIATUM* (VISCACEAE) IN SOUTHERN SPAIN
*Abelardo Aparicio, Maria Jesus Gallego, and Carlos Vázquez*

50–54 LIVING SEROTINOUS CONES IN *CUPRESSUS SEMPERVIRENS*
*Simcha Lev-Yadun*

55–60 MANGROVE GENETICS. III. PIGMENT FINGERPRINTS OF CHLOROPHYLL-DEFICIENT MUTANTS
*Jorge E. Corredor, Julio M. Morell, Edward J. Klekowski, Jr., and Robin Lowenfeld*

61–92 THE SPECIES OF THE EARLY CARBONIFEROUS FOSSIL PLANT GENUS *GENSELIA*
*Margaret Jane Knaus*

93–116 FAGACEOUS FLOWERS, FRUITS, AND CUPULES FROM THE CAMPANIAN (LATE CRETACEOUS) OF CENTRAL GEORGIA, USA
*Patrick S. Herendeen, Peter R. Crane, and Andrew N. Drinnan*

117–124 *PINUS* POLLEN CONES FROM THE MIDDLE EOCENE PRINCETON CHERT (ALLENBY FORMATION) OF BRITISH COLUMBIA, CANADA
*Carlie J. Phipps, Jeffrey M. Osborn, and Ruth A. Stockey*

125–127 PATTERN ANALYSIS IN THE SHOOTS OF PLANTS: REVIEW OF *PHYLLOTAXIS: A SYSTEMIC STUDY OF PLANT MORPHOGENESIS, Roger V. Jean*
*Reviewed by P. B. Tomlinson*

128–129 SYMBOLS AND ABBREVIATIONS COMMONLY USED IN *INTERNATIONAL JOURNAL OF PLANT SCIENCES*


## NUMBER 2, MARCH 1995


131–142 THE ULTRASTRUCTURE OF THE EARLY DEVELOPMENT OF *SCHIZAEA PUSILLA* GAMETOPHYTES
*John Z. Kiss, Fan Wang-Cahill, and Helen Guiragossian Kiss*

143–158 DEVELOPMENTAL MORPHOLOGY OF REPRODUCTIVE STRUCTURES OF *ZOSTERA* AND A RECONSIDERATION OF *HETEROZOSTERA* (ZOSTERACEAE)
*Connie L. Soros-Pottruff and Usher Posluszny*

159–171 INFLORESCENCE AND FLORAL DEVELOPMENT IN *ORCHIDANTHA MAXILLARIOIDES* (LOWIACEAE)
*Bruce K. Kirchoff and Henning Kunze*

172–180 REPRODUCTIVE STRUCTURE AND ORGANOGENESIS IN A COTTONWOOD, *POPULUS DELTOIDES* (SALICACEAE)
*Robert B. Kaul*

181–187 *CERCIS SILIQUASTRUM* L.: A COMPARATIVE STUDY OF ENDOSPERM AND EMBRYO DEVELOPMENT AND RESERVE ACCUMULATION
*Barbara Baldan, Antonella Bonaldo, Nicoletta Rascio, Alessandro Vitale, Flavio Meggio, Paola Profumo, and Paola Mariani*

188–196 PARTITIONING OF $^{14}C$ ASSIMILATES BETWEEN SOURCES AND SINKS DURING DIFFERENT GROWTH STAGES IN THE SYMPODIAL THIN-LEAVED ORCHID *ONCIDIUM* GOLDIANA
*J. W. H. Yong and C. S. Hew*

197–205 GROWTH AND PHYSIOLOGY OF *SALICORNIA BIGELOVII* TORR. AT SUBOPTIMAL SALINITY
*Felix Ayala and James W. O'Leary*

206–215 GERMINATION ECOPHYSIOLOGY OF *LEYMUS CINEREUS* (POACEAE)
*S. E. Meyer, J. Beckstead, P. S. Allen, and H. Pullman*

216–226 COMPARATIVE GAS EXCHANGE AND NITROGEN RESPONSES OF THE DOMINANT $C_4$ GRASS *ANDROPOGON GERARDII* AND FIVE $C_3$ FORBS TO FIRE AND TOPOGRAPHIC POSITION IN TALLGRASS PRAIRIE DURING A WET YEAR
*C. L. Turner, J. R. Kneisler, and A. K. Knapp*

227–231 DOES POLLEN VIABILITY DECREASE WITH AGING? A CROSS-POPULATION EXAMINATION IN *AUSTROCEDRUS CHILENSIS* (CUPRESSACEAE)
*Marcelo A. Aizen and Adriana E. Rovere*

232–235 CYTOGENETICS AND REPRODUCTION OF *PASPALUM DASYPLEURUM* AND ITS HYBRIDS WITH *P. URVILLEI* AND *P. DILATATUM* SSP. *FLAVESCENS*
*Camilo L. Quarín and Irene Caponio*

236–243 AGE AND SIZE STRUCTURE IN POPULATIONS OF A LONG-LIVED DIOECIOUS GEOPHYTE: *BORDEREA PYRENAICA* (DIOSCOREACEAE)
*María B. García and Ramón J. Antor*

## NUMBER 3, MAY 1995

245–256 ASPECTS OF VASCULAR TISSUE DIFFERENTIATION IN PLANTS: PARAMETERS THAT MAY BE USED TO MONITOR THE PROCESS
*D. H. Northcote*

257–269 THE REPRODUCTIVE BIOLOGY OF KAURI (AGATHIS AUSTRALIS). I. POLLINATION AND PREFERTILIZATION DEVELOPMENT
*John N. Owens, Glenda L. Catalano, Sheila J. Morris, and J. Aitken-Christie*

270–289 OCCURRENCE OF DISTINCTIVE CELLS IN LEAVES OF $C_4$ SPECIES IN *ARTHRAXON* AND *MICROSTEGIUM* (ANDROPOGONEAE-POACEAE) AND THE STRUCTURAL AND IMMUNOCYTOCHEMICAL CHARACTERIZATION OF THESE CELLS
*Osamu Ueno*

290–302 CELLULAR CHANGES PRECEDE CAVITY FORMATION IN THE VASCULAR CYLINDERS OF PEA ROOTS (*PISUM SATIVUM* L. CV ALASKA)
*Teruo Niki, Daniel K. Gladish, Pengzhe Lu, and Thomas L. Rost*

303–310 LEAF TATTER IN *ACER SACCHARUM:* AN ANATOMICAL LINK
*M. Elizabeth Conley, Ellen T. Paparozzi, John C. Pair, and Walter W. Stroup*

311–319 CONSTRAINED GROWTH OF TREES IN A HOSTILE ENVIRONMENT: THE ROLE OF WATER AND NUTRIENT AVAILABILITY FOR *THUJA OCCIDENTALIS* ON CLIFF FACES
*Uta Matthes-Sears, Caedmon H. Nash, and Douglas W. Larson*

320–325 A MATERNALLY INHERITED, CHLOROPHYLL-DEFICIENT MUTANT OF A TRANSGENIC KANAMYCIN-RESISTANT *NICOTIANA PLUMBAGINIFOLIA* PLANT
*A. J. Conner and J. L. Tynan*

326–331 GENOME RELATIONSHIP AND REPRODUCTIVE BEHAVIOR OF INTRASPECIFIC *PASPALUM DILATATUM* HYBRIDS: YELLOW-ANTHERED × URUGUAIANA
*Byron L. Burson*

332–345 THE BIOLOGY OF THE FERN *CERATOPTERIS* AND ITS USE AS A MODEL SYSTEM
*Leslie G. Hickok, Thomas R. Warne, and Renée S. Fribourg*

346–358 USING THE DEVELOPING SPERMATOGENOUS CELLS OF *CERATOPTERIS* TO UNLOCK THE MYSTERIES OF THE PLANT CYTOSKELETON
*John C. Hoffman and Kevin C. Vaughn*

359–366 *CERATOPTERIS:* A MODEL SYSTEM FOR STUDYING SEX-DETERMINING MECHANISMS IN PLANTS
*James Eberle, Jill Nemacheck, Chi-Kuang Wen, Mitsuyasu Hasebe, and Jo Ann Banks*

367–373 THE FERN *CERATOPTERIS RICHARDII* AS A LOWER PLANT MODEL SYSTEM FOR STUDYING THE GENETIC REGULATION OF PLANT PHOTOMORPHOGENESIS
*Todd J. Cooke, Leslie G. Hickok, and Michizo Sugai*

374–384 THE ANALYSIS OF GENETICALLY AND PHYSIOLOGICALLY COMPLEX TRAITS USING *CERATOPTERIS:* A CASE STUDY OF NaCl-TOLERANT MUTANTS
*Thomas R. Warne, Dale L. Vogelien, and Leslie G. Hickok*

385–392 *CERATOPTERIS:* AN IDEAL MODEL SYSTEM FOR TEACHING PLANT BIOLOGY
*Karen Sue Renzaglia and Thomas R. Warne*

## NUMBER 4, JULY 1995

393–403 PHYSIOLOGICAL ASPECTS OF DESICCATION TOLERANCE—A RETROSPECT
*J. Derek Bewley*

404–416 THE REPRODUCTIVE BIOLOGY OF KAURI (*AGATHIS AUSTRALIS*). II. MALE GAMETES, FERTILIZATION, AND CYTOPLASMIC INHERITANCE
*John N. Owens, Glenda L. Catalano, Sheila J. Morris, and J. Aitken-Christie*

417–424 NO EVIDENCE FOR SELECTIVE FRUIT ABORTION IN THE AUSTRALIAN SHRUB *GREVILLEA BARKLYANA* (PROTEACEAE)
*Glenda Vaughton*

425–434 ALLELOPATHIC POLLEN EXTRACT FROM *PHLEUM PRATENSE* L. (POACEAE) REDUCES GERMINATION, IN VITRO, OF POLLEN OF SYMPATRIC SPECIES
*Stephen D. Murphy and Lonnie W. Aarssen*

435–444 ALLELOPATHIC POLLEN EXTRACT FROM *PHLEUM PRATENSE* L. (POACEAE) REDUCES SEED SET IN SYMPATRIC SPECIES
*Stephen D. Murphy and Lonnie W. Aarssen*

445–449 THE INFLUENCE OF TEMPERATURE UPON PHYSIOLOGICAL PROCESSES IN EARLY-FLOWERING AND LATE-FLOWERING STRAINS OF *THLASPI ARVENSE* L.
*L. Hume, M. D. Devine, and S. Shirriff*

450–459 THE IMPORTANCE OF PHOTOASSIMILATE CONTRIBUTION FROM THE CURRENT SHOOT AND CONNECTED BACK SHOOTS TO INFLORESCENCE SIZE IN THE THIN-LEAVED SYMPODIAL ORCHID *ONCIDIUM* GOLDIANA
*J. W. H. Yong and C. S. Hew*

460–470 PREFERENTIAL TRANSCRIPTIONAL ACTIVITY OF A GLYCINE-RICH PROTEIN GENE FROM *ARABIDOPSIS THALIANA* IN PROTODERM-DERIVED CELLS
*Gilberto Sachetto-Martins, Lygia D. Fernandes, Durvalina B. Felix, and Dulce E. de Oliveira*

471–480 STARCH DEGRADATION IN KIWIFRUIT: IN VIVO AND IN VITRO ULTRASTRUCTURAL STUDIES
*Ian C. Hallett, Teresa F. Wegrzyn, and Elspeth A. MacRae*

481–487 MORPHOLOGY AND ULTRASTRUCTURE OF SECRETING AND NONSECRETING FOLIAR TRICHOMES OF *HELICHRYSUM AUREONITENS* (ASTERACEAE)
*A. J. Afolayan and J. J. M. Meyer*

488–495 EFFECT OF NAA AND GA$_3$ ON LEAVES AND GLANDULAR TRICHOMES OF *ORIGANUM* × *INTERCEDENS* RECH.: MORPHOLOGICAL AND ANATOMICAL FEATURES
*A. M. Bosabalidis and F. Exarchou*

496–504 LOW-TEMPERATURE TOLERANCE AND ACCLIMATION OF *OPUNTIA* SPP. AFTER INJECTING GLUCOSE OR METHYLGLUCOSE
*Park S. Nobel, Ning Wang, Ronald A. Balsamo, Michael E. Loik, and Mary Ann Hawke*

505–513 DEVELOPMENTAL CHANGES OF COTTON ROOT PRIMARY TISSUES INDUCED BY SALINITY
*D. H. Reinhardt and T. L. Rost*

514–521 EFFECTS OF DROUGHT AND FLOODING ON ROOT ANATOMY IN FOUR TROPICAL FORAGE GRASSES
*Zdravko Baruch and Tatiana Mérida*

522–529 PLASTICITY OF SEED NUMBER, MASS, AND ALLOCATION IN CLONES OF THE PERENNIAL GRASS *AMPHIBROMUS SCABRIVALVIS*
*Gregory P. Cheplick*

530–541 A COMPARISON OF RARE AND COMMON GRASSES OF THE STIPEAE. I. GREENHOUSE STUDIES OF GROWTH AND VARIATION IN FOUR SPECIES FROM PARAPATRIC POPULATIONS
*Kathleen A. Robson and Jack Maze*

542–546 LOST IN PHENOTYPIC SPACE: ENVIRONMENT-DEPENDENT MORPHOLOGY IN *PHLOX DRUMMONDII* (POLEMONIACEAE)
*Carl D. Schlichting and Massimo Pigliucci*

547–554 VASCULAR PATTERN IN THE FRUIT OF *TRIGONOCAPNOS* AND *DISCOCAPNOS* (PAPAVERACEAE-FUMARIOIDEAE)
*Tatsundo Fukuhara*

555–580 SEED MORPHOLOGY OF HYDRANGEACEAE AND ITS PHYLOGENETIC IMPLICATIONS
*Larry Hufford*

## NUMBER 5, SEPTEMBER 1995

581–589 PATTERN AND FORM IN REPEATED ELEMENTS IN THE DEVELOPMENT OF SIMPLE LEAVES OF *BEGONIA DREGEI*
*Tracy McLellan and Nancy G. Dengler*

590–602 A MORPHOMETRIC ANALYSIS OF HETEROPHYLLOUS LEAF DEVELOPMENT IN *RANUNCULUS FLABELLARIS*
*Jane P. Young, Timothy A. Dickinson, and Nancy G. Dengler*

603–614 PATTERNS OF PROCAMBIAL DEVELOPMENT IN RACHILLA AND FLORET OF *MUHLENBERGIA TORREYANA* (GRAMINEAE, CHLORIDOIDEAE)
*Thompson Demetrio Pizzolato*

615–621 THE DEVELOPMENT OF THE TRANSMITTING TRACT IN THE PISTIL OF *HACQUETIA EPIPACTIS* (APIACEAE)
*Martina Weber and Andrea Frosch*

622–629 DEVELOPMENTAL ANATOMY OF *CYPERUS ESCULENTUS* (YELLOW NUTSEDGE)
*Ernest M. Gifford and David E. Bayer*

630–639 OVULATE CONE MORPHOLOGY AND POLLINATION IN *PSEUDOTSUGA* AND *CEDRUS*
*T. Takaso and J. N. Owens*

640–649 POLLINATION DROP AND MICRODROP SECRETIONS IN *CEDRUS*
*T. Takaso and J. N. Owens*

650–657 DEVELOPMENT OF SEEDS AS SELF-ORGANIZING UNITS: TESTING THE PREDICTIONS
*R. Uma Shaanker, K. N. Ganeshaiah, and K. S. Krishnamurthy*

658–667 ELECTROPHYSIOLOGY OF THE SALT GLANDS OF *AVICENNIA GERMINANS*
*Ronald A. Balsamo, Michael E. Adams, and William W. Thomson*

668–678 IMMUNOCYTOCHEMICAL LOCALIZATION OF TAXOL IN *TAXUS CUSPIDATA*
*William A. Russin, David D. Ellis, Jennifer R. Gottwald, Eric L. Zeldin, Marion Brodhagen, and Ray F. Evert*

679–686 ROOTING CHARACTERISTICS OF TREES IN ROCK: A STUDY OF *THUJA OCCIDENTALIS* ON CLIFF FACES
*Uta Matthes-Sears and Douglas W. Larson*

687–697 PHENOTYPIC PLASTICITY AND GENETIC VARIATION OF *VACCINIUM MACROCARPON*, THE AMERICAN CRANBERRY. I. REACTION NORMS OF CLONES FROM CENTRAL AND MARGINAL POPULATIONS IN A COMMON GARDEN
*C. Neal Stewart Jr. and Erik T. Nilsen*

698–708 PHENOTYPIC PLASTICITY AND GENETIC VARIATION OF *VACCINIUM MACROCARPON*, THE AMERICAN CRANBERRY. II. REACTION NORMS AND SPATIAL CLONAL PATTERNS IN TWO MARGINAL POPULATIONS
*C. Neal Stewart Jr. and Erik T. Nilsen*

709–722 WINGED FRUITS OF LINNAEEAE (CAPRIFOLIACEAE) IN THE TERTIARY OF WESTERN NORTH AMERICA: *DIPLODIPELTA* GEN. NOV.
*Steven R. Manchester and Michael J. Donoghue*

723–730 CUTICLE MICROMORPHOLOGY OF *PARASITAXUS* DE LAUBENFELS (PODOCARPACEAE)
*Ruth A. Stockey, Helen Ko, and Philippe Woltz*

731–739 CYTOGENETICS AND MORPHOLOGY OF *ELYMUS PANORMITANUS* VAR. *HETEROPHYLLUS* AND ITS RELATIONSHIP TO *ELYMUS PANORMITANUS* VAR. *PANORMITANUS* (POACEAE: TRITICEAE)
*Kevin B. Jensen and Bjorn Salomon*

740–742 *THE DEVELOPMENT OF FLOWERS, Richard I. Greyson*
*Reviewed by Elizabeth M. Lord*

743–746 *DIVERSITY AND EVOLUTIONARY BIOLOGY OF TROPICAL FLOWERS, Peter K. Endress*
*Reviewed by Larry Hufford*

## NUMBER 6, NOVEMBER 1995

iii REVIEWER LIST

747–755 ANOMALOUS DIFFERENTIATION IN *CHARA* RHIZOIDS: EFFECT OF GRAVITY VECTOR
*N. R. Gerber, M. A. Bisson, and R. Chau*

756–763 ASPECTS OF THE VERY RAPID ABSCISSION OF *AZOLLA* BRANCHES: ANATOMY AND POSSIBLE MECHANISM
*Eiji Uheda, Sumio Nakamura, and Shunji Kitoh*

764–773 INTRACELLULAR MOVEMENTS AND REORGANIZATION OF ELECTRICALLY FUSED SUNFLOWER PROTOPLASTS
*Angnes von Keller, Martin Tewinkel, Ruth Wingender, Dieter Volkmann, and Heide Schnabl*

774–783 GROWTH AND MICROTUBULE ORIENTATION OF *ZEA MAYS* ROOTS SUBJECTED TO OSMOTIC STRESS
*Elison B. Blancaflor and Karl H. Hasenstein*

784–792 RESPONSE OF XYLEM RAY PARENCHYMA CELLS OF SUPERCOOLING WOOD TISSUES TO FREEZING STRESS: MICROSCOPIC STUDY
*Zoran Ristic and Edward N. Ashworth*

793–806 THE REPRODUCTIVE BIOLOGY OF KAURI (*AGATHIS AUSTRALIS*). III. PROEMBRYOGENY AND EARLY EMBRYOGENY
*John N. Owens, Glenda L. Catalano, Sheila J. Morris, and J. Aitken-Christie*

807–815 FLORAL MORPHOLOGY OF *ARTEMISIA ANNUA* WITH SPECIAL REFERENCE TO TRICHOMES
*Jorge F. S. Ferreira and Jules Janick*

816–823 THE SPATIAL DEMOGRAPHY OF MISTLETOE PARASITISM ON A YEMENI *ACACIA*
*Kathleen Donohue*

824–833 THE ECOLOGICAL SIGNIFICANCE OF FRUIT HETEROMORPHISM IN THE AMPHICARPIC SPECIES *CATANANCHE LUTEA* (ASTERACEAE)
*E. Ruiz de Clavijo*

834–840 ROLE OF DISTURBANCE ON THE SEED BANK AND DEMOGRAPHY OF *LEUCUS URTICIFOLIA* (LABIATAE) POPULATIONS IN A MARITIME SUBTROPICAL DESERT OF PAKISTAN
*Seemi Aziz and M. Ajmal Khan*

841–848 SEPTAL STRUCTURES IN THE SARCOSCYPHACEAE AND SARCOSOMATACEAE (PEZIZALES)
*Li-Tzu Li and James W. Kimbrough*

849–856 SEPTAL ULTRASTRUCTURE IN THREE SPECIES OF *TUBER* (HYPOGEOUS PEZIZALES)
*Li-Tzu Li and James W. Kimbrough*

857–862 VESSELS IN NYMPHAEACEAE: *NUPHAR, NYMPHAEA,* AND *ONDINEA*
*Edward L. Schneider, Sherwin Carlquist, Kelley Beamer, and Alison Kohn*

863–895 A REINVESTIGATION OF *STENOMYELON* FROM THE LATE TOURNAISIAN OF SCOTLAND
*Brigitte Meyer-Berthaud and William E. Stein*

896–909 A NEW GENUS AND SPECIES, *CELATHECA BECKII,* FROM THE SIEGENIAN (EARLY DEVONIAN) OF SOUTHEASTERN YUNNAN, CHINA
*Shougang Hao and Patricia G. Gensel*

910–950 EVOLUTIONARY HISTORY OF THE GENUS *PSEUDOLARIX* GORDON (PINACEAE)
*Ben A. LePage and James F. Basinger*

953–957 VOLUME TABLE OF CONTENTS

958 VOLUME AUTHORS

959–961 VOLUME INDEX